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10/796,299

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Jefferson G. Shingleton

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EXAMINER

BERDICHEVSKY, MIRIAM

ART UNIT

PAPER NUMBER

1795

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/796,299	<b>Applicant(s)</b> SHINGLETON ET AL.	
	<b>Examiner</b> MIRIAM BERDICHEVSKY	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on amendment 01 December 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7, 9-15 and 31-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9-15 and 31-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Remarks***

Claims 1-7, 9-15 and 31-35 are currently pending.

### ***Status of Objections and Rejections***

All rejections from the previous office action are maintained.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

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3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. Claims 1-2, 8 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Makita (US 20010050101), McArthur (US 4184476) and Hartman (US 2873698).

As to claims 1 and 31, Makita teaches a modular shade system comprising:

- A support/mounting structure, supportable by a support surface, defining a first area having a length and a width ([0097]: the Examiner notes that the structure will inherently have a first area and periphery thereof),
- A planar array of modular panels, having upper and lower surfaces, mounted to and supported by the support structure ([0097]),
- The upper surfaces of the modular panels being exposed surfaces (the Examiner notes that the upper surfaces will be exposed in order to receive radiation and operate),
- The modular panels comprising PV panels and supplemental panels ([0097]),
- A separate protective panel (figure 19A: 1202 and figure 20: 1303) for each of the PV panels (figure 19A: 1201), the protective panels mounted to the shading system (figure 20) which comprises at least one of the mounting structure and the PV panels opposite, spaced apart from and covering substantially the entire lower surfaces of the PV panels (wherein the PV panel is described in detail in figure 9 showing that layers 405/406 provide space between the PV panel 401 and the protective panel in

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figure 19A, [0108]), the protective panels comprising at least one of a wire mesh and a sheet material (figures 19A and 20), the modular shade system defining open regions below the protective panels (open region between in figure 20: 1303 and 1301), and

- The supplemental panels being other than PV panels ([0097]).

Further regarding claim 31, Makita teaches:

- a protective panel (2206) mounted to at least one of the mounting structure and the PV module opposite (2201), spaced apart from and covering substantially the entire lower surface of the PV module, the protective panel comprising at least one of a wire mesh and a sheet of material (Figure 2).

Makita does not describe the roof structure or car port structure and thus does not define that the car port has an elevated, generally horizontal first area and the modular panels covering at least about 80% of the first area and the shade system being wall-less having open side regions extending downwardly from the periphery of the first area.

McArthur teaches a roof structure which has an elevated first area and the modular panels covering a first area and the shade system (figure 1: 22, 26) but is silent to the first area specifically being 80%. McArthur further teaches a protective panel (50) for each PV panel covering substantially the entire lower surface of each panel mounted to the shading system spaced apart from the PV panel (Figure 4) (McArthur: col. 44, lines 42-47).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use at least 80% PV modules in the construction of Makita because increasing the coverage of PV modules increases the energy generated.

Hartman teaches a generally horizontal standing roofing structure which is used for example as a car port/shade system which is wall-less having open side regions extending downwardly from the periphery of the first area (figure 1).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the car port design of Hartman in the car port structure of Makita because such a design simple especially in light of the fact that Makita is not particular about the design of the car port because one would appreciate that the particulars of the support structure are well known in the art and are merely an obvious design choice.

Regarding claim 2, modified Makita teaches the support structure comprising a series of generally parallel purlins (20) supporting the modular panels, beams (18) located beneath the purlins and oriented transversely to the purlins, the purlins secured to and supporting each of the beams (McArthur : col. 3, lines 8-20, Figure 1). One of ordinary skill would appreciate that the support structure constructions of McArthur and Hartman.

Regarding claim 8, modified Makita teaches protective panels (50) mounted to the shading system subassembly opposite, spaced apart from and covering substantially the entire lower surfaces of the PV modules, the protective panels comprising at least one of a wire mesh and a sheet of material

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5. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Makita, McArthur and Hartman as applied to claim 1.

Regarding claim 13, modified Makita is silent to the PV modules covering at least about 90% of the first area.

It would have been obvious to one of ordinary skill in the art at the time of the invention to increase the number of PV panels in modified Makita to at least 90% of the first area to increase the absorption and use of solar energy by the roof.

6. Claims 3- 5, 7 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Makita, McArthur and Hartman as applied to claim 1, in view of Gauvin (US 6130781).

Regarding claims 3-5, modified Makita teaches the use of conventional sky-light plastic as part of the modular panel construction (McArthur: col. 3, lines 45-47) but is silent to the supplemental panels comprise light transmissive panels and wherein light transmissive panels cover about 5-30% of the first area.

Further regarding claim 5, modified Makita teaches that the supplemental panels are adjacent to one another along a path parallel to the length (McArthur: 22, Figure 1) but is silent to the supplemental panels comprising light transmissive panels.

Gauvin teaches that skylighting is a popular means for introducing natural light into a building (col. 1, lines 27-30).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the skylight of Gauvin as a supplemental panel in modified Makita because skylighting introduces natural light into a structure, as taught by Gauvin (col. 1,

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lines 27-30) especially in light of the fact that modified Makita teaches use and knowledge of skylighting materials (McArthur: col. 3, lines 45-47). Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use skylights such that they cover 5-30% of the roof as well as placement of the skylights (light transmissive panels) adjacent to one another and along a path parallel to the length in order to adjust the amount of natural lighting entering the building as a matter of obvious design choice.

Regarding claim 7, modified Makita teaches that the supplemental panels comprise light-transmissive panels and wherein the PV panels and light-transmissive panels cover at least about 90% of the first area (McArthur: Figure 1).

Regarding claim 14, modified Makita teaches that the supplemental panels comprise phosphorescent panels to provide passive nighttime illumination beneath support structure.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the phosphorescent light transmissive panels of Gauvin in modified Makita because they offer illumination after daylight hours (abstract).

7. Claims 3-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Makita, McArthur and Hartman as applied to claim 1, in view of Berman (US 4663085 as cited in the IDS).

As to claims 3-7, modified Makita is silent to the supplemental panels comprise light- transmissive panels, cover about 0 to 50% or 5 to 30 % of the first area, are placed adjacent to one another along a path parallel to the length, comprise light



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transmissive PV panels, and the PV panels are light-transmissive panels cover at least about 90% of the first area.

Berman discloses a light-transmissive solar panel in Figure 1 (transparent photovoltaic panel, 10) which may be used on a roof-top (see Figure 7) to provide transmitted light that is not used for photovoltaic conversion for other purposes such as illuminating the interior of a dwelling (abstract, last sentence). Further, the PV panels of Berman et al. (transparent photovoltaic panel, 10) are light-transmissive PV panels. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the light-transmissive solar panel of Berman et al. to the modular shade system of Roderick et al. in order to provide light for non-photovoltaic purposes such as illuminating the interior of a dwelling.

Further, one of ordinary skill in the art would use the appropriate fraction of light-transmissive PV panels of Berman to provide the desired level of illumination to the interior of a dwelling. This includes, but is not limited to, using light-transmissive PV panels to cover 0 to 50 % or 5 to 30 % of the first area defined by the support structure of Roderick et al. in the context of claim 1 above. Finally, one of ordinary skill in the art would also place the light-transmissive PV panels of Berman as needed including placing them adjacent to one another along a path parallel to the length or to cover up to 90 % of the first area defined by the support structure of modified Makita in the context of claim 1 above again in order to provide the desired level of illumination to the interior of a dwelling.

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8. Claims 9, 12, 32 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Makita, McArthur and Hartman as applied to claims 1 and 31, respectively, in view of Mori (US 6218609).

Regarding claims 9, 12, 32 and 35, modified Makita is silent to the protective panels comprising perforated sheet metal, plastic, perforated plastic, cement board and perforated cement board.

Mori teaches protective panels comprising perforated sheet metal, plastic, perforated plastic, cement board and perforated cement board (col. 1, lines 15-28, and col. 6, line 57 to col. 7, line 6). The Examiner notes that the limitation "to provide ventilation for the PV panels" is functional, does not provide structural limitations on the claimed invention and is therefore not given patentable weight.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the protective perforated sheet of Mori in modified Makita because the sheet provides flexibility, strength and an attachment means (col. 1, lines 24-28 and col. 6, line 66 to col. 7, line 6).

9. Claims 9, 12, 32 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Makita, McArthur and Hartman as applied to claims 1 and 31, respectively, in view of Christensen (US 20050061311).

Regarding claims 9, 12, 32 and 35, modified Makita is silent to the protective panels comprising perforated sheet metal, plastic, perforated plastic, cement board and perforated cement board.

Christensen teaches protective panels for each PV panel wherein the protective panel comprises perforated sheet metal, plastic, perforated plastic, cement board and perforated cement board ([0020]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the protective perforated sheet of Christensen in modified Makita because the perforated sheet provides cools the PV panel and prevents excessive heating thereof ([0034]).

10. Claims 10 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Makita, McArthur and Hartman as applied to claim 8 in view of Berman and Samuelson (US 4692557).

Regarding claims 10 and 33, modified Makita is silent to the PV modules and the protective panels being constructed to permit some light to pass therethrough.

Berman discloses a light-transmissive solar panel in Figure 1 (transparent photovoltaic panel, 10) which may be used on a roof-top (see Figure 7) to provide transmitted light that is not used for photovoltaic conversion for other purposes such as illuminating the interior of a dwelling (abstract, last sentence). Further, the PV panels of Berman et al. (transparent photovoltaic panel, 10) are light-transmissive PV panels. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the light-transmissive solar panel of Berman et al. to the modular shade system of Roderick et al. in order to provide light for non-photovoltaic purposes such as illuminating the interior of a dwelling.

Further, one of ordinary skill in the art would use the appropriate fraction of light-transmissive PV panels of Berman to provide the desired level of illumination to the interior of a structure.

Samuelson teaches a light transmissive backing material (a polymer or glass) (col. 11, lines 7-12).

It would have been obvious to one of ordinary skill at the time of the invention to use the transparent module of Berman with protective backing of Samuelson in McArthur to provide the desired level of illumination to the interior of a structure while providing a protective layer for the PV module from the interior.

11. Claims 11 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Makita, McArthur and Hartman as applied to claim 8 and 31, respectively, in view of Nath et al. (US 5,968,287 as cited in the IDS).

Regarding claims 11 and 34, modified Makita is silent to the protective panels having a lower protective panel surface, at least substantially the entire lower protective panel surface.

Nath discloses a photovoltaic (PV) cell module building panels (Figure 1) (co1.1; lines: 6-9) and further discloses an architectural/protective panel (14) that includes a convex central portion onto which a photovoltaic device is to be attached (Figure 1)(since the entire portion is underneath the PV device, this includes the lower portion) which makes the use of (co1.1 ; lines: 59-61 ), Nath further teaches that the preformed architectural/protective panels (14) would be advantageous since it utilizes minimal hardware and can be utilized for standing building structures (co1.2; lines: 43-47).

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It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a convex protective panel as taught by Nath to the PV panels of modified Makita in order to utilize minimal hardware and can be utilized for standing building structures.

12. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Makita, McArthur and Hartman as applied to claim 1, in view of McDonough (US 6606823 as cited in the IDS).

Regarding claim 15, modified Makita is silent to the supplemental panels comprising planter panels for planting of plants.

McDonough teaches supplemental panels comprising planter panels for planting of plants (claim 24).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the planter of McDonough in modified Makita because they extend the longevity or traditional roofing membranes and manages storm water run off (col. 1, lines 4-10).

### ***Response to Arguments***

Applicant's arguments with respect to claims 1 and 31 have been considered but are not persuasive.

Applicant argues that the solar cell string can not be considered a PV panel and that the entire collection of layers in figure 9 must be considered the PV panel such that the PV panel and protective panel do not meet the limitation of "spaced apart". The Examiner disagrees. "Solar panel" is defined as "a group of connected solar cells" and

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solar cell is defined as "a photovoltaic cell which converts sunlight to direct energy" (see attached definitions). Given the broadest reasonable interpretation, a solar cell string reads on the definition of solar panel such that the layers between the solar cell string/panel provide a spaced apart relationship between the protective panel and the solar cell panel in Makita. Moreover, there is no reason that the solar cell string of Makita could not have been formed directly on the protective panel and had this been the case then, Makita would not read on claim 1. Similarly, Nath teaches that the solar cell devices are adhesively affixed to the panel therefore the adhesive (88) being between the two components provides the spaced apart relationship (figure 8).

Applicant does not claim a PV panel more narrowly nor does Applicant require that the spaced apart relationship result in a void/air space between the two panels. Applicant argues that the curved panel of Nath would not have been obvious because it provides basic support. The Examiner disagrees. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a convex protective panel as taught by Nath to the PV panels of modified Makita in order to utilize minimal hardware and can be utilized for standing building structures. Furthermore, one would appreciate that adding curvature to the protective panel has a reasonable expectation of success with similar results (MPEP 2141).

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **MIRIAM BERDICHEVSKY** whose telephone number is (571)270-5256. The examiner can normally be reached on M-Th, 10am-8pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. B./  
Examiner, Art Unit 1795

/Alexa D. Neckel/  
Supervisory Patent Examiner, Art Unit 1795